DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-003035
Date Inspected: 23-Jun-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1530
Location: Shanghai, China

CWI Name:	Wu Ming Cai and Shazhi			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG and SAS Tower Fabrication

Summary of Items Observed:

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.

The QA Inspector has randomly observed the following activities on sub-assembly Bays mentioned below;

Bay 2: 114M Tower Mock-ups, Plate Cutting, Rolling
This QA Inspector observed machining/beveling of 4 -30mm thick plates marked FB26A, FB25A, FB8B, and FB78B, were seen in progress. These plates are intended for floor beam splices. Rolling of 1-60mm thick x 400mm wide plate marked P56P for longitudinal skin plate stiffener was seen complete. There was no Caltrans job at the cutting table and tower mock up 114M was noted idle.

Bay 3: OBG side/bottom/edge panel:
The QA Inspector randomly observed ZPMC welder Jiang Jing Teng ID Number 046830, utilizing the SAW Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2221-B-L2c-S-1, to weld the fill pass on plate butt splice of side panel SP192-001-001. The QA Inspector randomly observed ZPMC CWI Wu Ming Cai, monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 508 amps, 29.5 volts with a travel speed of 430 mm per minute. Weld parameters appeared to comply with contract requirements.

Tack welding/fit-up of two 6-WT(W21x57) rib stiffener to side panel SP173-001-013~018 and

SP176-001-013~018 using 4.0mm diameter TL-508 electrode noted. Three open rib stiffener DP046-001 weld number 001/002 and 005/006 being preheated with corner ceramic thermal blanket at gantry table prior welding and 3-open rib stiffener to deck panel DP045-001-001~006 being clamped and getting ready for preheat prior welding this QA observed.

The QA Inspector randomly observed ZPMC welder operator Sun Ti Yu ID #054459 utilizing the Flux Cored Arc Welding (FCAW) Process in the 2F (Horizontal Fillet) Position with gantry mounted welding apparatus and 1. 4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic to weld fillet between open rib stiffener to side panel SP175-001-018 using ZPMC Weld Procedure Specification (WPS) WPS-B-T-2132-3. QA Inspector Lizardo randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 290 amps, 30.4 volts and 475mm per min travel speed. The weld parameters appeared to comply with contract requirements.

This QA also observed clamping of 3-open rib stiffener of deck panel DP048-001-001~006 to gantry #1 was on going, power wire brushing of tack welds and weld surfaces on clamped 3-open rib stiffener to deck panel DP047-001-001~006 at gantry #1 welding table. Drilling of 16-24mm diameter bolt holes on flange and 14-24mm diameter bolt holes on web of WT (W21x57) rib stiffener for various bottom panels BP196 and side panels SP173 in progress. This QA observed one WT rib stiffener wedged with 4"x4" lumber that could possibly make the stiffener lost its straightness. ZPMC QC was informed concerning this incident and QC told this QA they will remove the lumber and lay the stiffener flat. See photo below.

Bay 4: Tower Diaphragm
Fillet welding on tower diaphragm plate to diaphragm flange ESD1-SA287-2 was seen complete. This QA randomly observed this fillet weld has an average leg size of 22mm and throat of 15mm. ZPMC personnel still grinding/polishing this fillet cover. See photo below.

This QA Inspector randomly observed two ZPMC welder ID number 053605 and Li Meng Quan ID #054460 utilizing the FCAW Process in the 3G (Vertical Groove) Position) with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly ESD1-SA317-9B and ESD1-SA268-9A respectively. The QA Inspector randomly observed ZPMC CWI Zhao Chen Sun monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 216 amps, 27.0 volts with a travel speed of 118 millimeters (mm) per minute for welder ID#053605 and 217 amps, 26. 5 volts with a travel speed of 118 millimeters (mm) per minute for welder ID#054460. The weld parameters appeared to comply with contract requirements.

Heat straightening was also observed on deck panel DP046(A)-001 weld joints 001~006 due to welding distortion. Oxy-acetylene gas was used and less than 650 degree C thermal heat input was implemented following procedure HSR1(B)-1277. Bending of heavy plates P1082(N)-4.9(B) and P1246(S)-4.14(F) for diaphragm flanges using oxy-acetylene with thermal heat input of less than 650 degree C with the aid of welded jig and following procedure HSR(T)-67 and HSR(T)-68 respectively.

Bay 7: OBG - Floor Beam Sub Assembly
The QA Inspector randomly observed ZPMC welder Chen Chuan Zong ID Number 044824, utilizing the FCAW

Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2231-B-U2-F-1, to weld the fill pass on plate butt splice of floor beam FB024-001-122/117. The QA Inspector randomly observed ZPMC CWI Hu Wei Qing, monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 290 amps, 29.5 volts with a travel speed of 530 mm per minute. Weld parameters appeared to comply with contract requirements.

QA Inspector J. Lizardo randomly observed ZPMC qualified welder Zhang Qingquan ID #044774 groove welding cover pass on (flange to web plate) tee joint. Mr. Zhang was observed welding in the 2G (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic at floor beam FB010-001-043. QA Inspector Lizardo observed the ZPMC QC CWI Inspector Huang Wen Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS).

FCAW fillet welding (2F) was observed on flange to web plate on floor beam sub-assembly FB011-003-009 and FB011-003-011/003. ZPMC welders working on these were identified as Liu Long Xian ID# 044786 and Liu Kai Ge ID #044830. ZPMC CWI Hu Wei Qing was noted monitoring the parameters. SMAW tack welding was also noted on floor beam plate splice butt joint of FB036-001-122 using 4.0mm diameter, THJ506Fe electrode.

Heat straightening was also observed on floor beam plate spliced butt joints FB027-001 weld joints 101, 108, 117 and 122 due to welding distortion. Oxy-acetylene gas was used and less than 600 degree C thermal heat input was implemented following procedure HSR1(B)-1264. ZPMC personnel was noted performing laser survey on alignment of floor beam bottom flange to hollow steel (300mm x 300mm) connection plate on 2-floor beam sub-assemblies that have no visible identification at the moment.

Bay 8: Tower Diaphragm
This QA observed there is no SAW(1G) welding on tower diaphragm plate splices. Per ZPMC CWI, all diaphragm plates for the 1st lift have been completed.

This QA Inspector randomly observed two ZPMC welder ID Jiang Yong Sheng ID number 045240 and Xie Chunfu ID #045236 utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly ESD1-SA32 -11A and WSD1-SA309-7A respectively. The QA Inspector randomly observed ZPMC CWI Shazhi monitoring weld parameters. Back gouging weld joints 6A, 8A and 9A of tower diaphragm flange ESD1-SA32 A/B after partially welding inside groove joint this QA also observed.

Tack welding/fit-up was noted on flange to web plate corner PJP joint of longitudinal shear plate LD009-003-012 using 4.0mm diameter TL-508 electrode. ZPMC welder Fu Yanjie ID #066268 was identified performing the task. During tack welding/fit-up of these sub-assemblies, paint coating was removed, close and tight gap noted and preheating was used.

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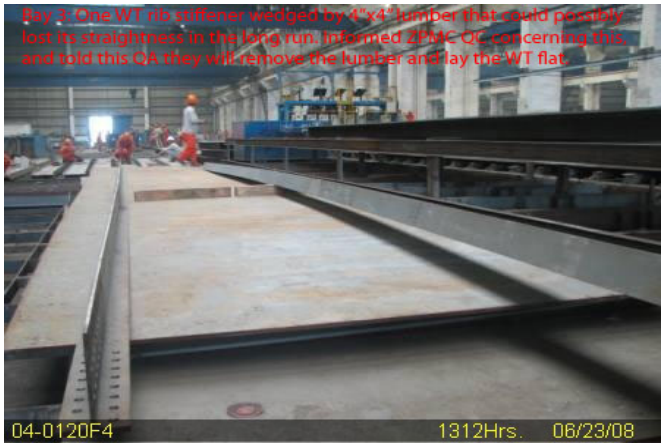

Summary of Conversations:

No significant conversation ocurred today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer